Air Force SBIR Impact

Low Cost, High Performance Composite Sandwich Structure Foam

Company:
Maxdem Incorporated

Location:
San Dimas, CA

Employees:
15

President:
Dr. Matthew Marrocco

Project Officer:
James Tuss
AFRL Air Vehicles Directorate
Wright-Patterson AFB, Ohio

Air Force Requirements:

The Air Force would like to develop new lightweight foam core materials for next generation sandwich structures used in many aircraft components. These new materials would alleviate the problems commonly encountered with currently used honeycomb structures, namely high moisture absorption, relatively poor bonding with the surface skins, and labor-intensive and costly manufacturing.

SBIR Technology:

Maxdem Incorporated won SBIR Phase I and II contracts to develop new high performance foam core materials. These materials are based on a new family of polymers that was invented at Maxdem. Collectively called Parmax™ resins, they are based on rigid polyphenylenes which also incorporate pendant solubilizing groups to make them processable. These resins are self-reinforced with molecules acting as both the reinforcing rigid-rod polymer (the molecular fiber) and the matrix, thus alleviating the phase separation problems common to molecular composite blends. Parmax™ resins are generally considered to have the most outstanding combination of properties including low specific gravity, exceptional rigidity, high strength and low moisture absorption rates, making them competitive with state-of-the-art commercial foams. The foams are produced using a combination of commercial and proprietary foaming techniques.

For more information on this story, contact Air Force TechConnect at 1-800-203-6451 or at www.afrl.af.mil/techconn/index.htm

Company Impact:

Maxdem Incorporated is continuing efforts on further optimization of these foams, in collaboration with Northrop Grumman Corp. and a commercial foam producer, under a Dual Use Applications Program. The development of these foams has led to significant interest from aircraft and helicopter manufacturers. Commercialization of these foams would significantly benefit the future generation of aerospace and naval structural components and generate significant resin sales for the company.

Company Quote:

"The development of new high performance organic foam core for sandwich structures is an important goal both for the Air Force and for Maxdem Incorporated. We are moving towards commercialization of both Parmax™ resins and foams, and our partnership with the Air Force through the SBIR program has allowed us to initiate and maintain a constant commitment to this technology."

Dr. Farshad J. Motamedi
Research Scientist
Maxdem Incorporated

SBIR

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